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ELECTROSTATIC DISCHARGE SENSITIVITY;
A Selected Bibliography

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NAVAL WEAPONS SUPPORT CENTER
ORDNANCE DEVELOPMENT DEPARTMENT
CRANE, IN 47522-5050

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- AD 349 443
 Naval Ordnance Lab., White Oak, Silver Spring, MD
 THE THERMAL SENSITIVITY OF HIGH ENERGY MATERIALS (U).
 NOLTR 63-280.
 Rosen, J. R., Holden, J. R.; Mar 64.
- AD 351 333
 Stanford Research Inst., Menlo Park, CA
 RELATIONSHIP BETWEEN DECOMPOSITION KINETICS AND SENSITIVITY (U).
 Annual Rept.; Mar 63-Mar 64; TPR 64-2, SRI 64-1509.
 Amster, A. B., et al; 96 pp.
- AD 352 577
 Standard Research Inst., Menlo Park, CA
 SENSITIVITY FUNDAMENTALS (U).
 Quarterly Rept.; Mar 64-Jun 64; SRI-64-2041, TPR-64-3.
 Amster, A. B., et al; Aug 64; 30 pp.
- AD 352 972
 Explosiform, Inc., Park Forest, IL
 NEW EXPLOSIVES EVALUATION TECHNIQUES (U).
 Mar 63-Jan 64; ATL-TDR-64-18.
 Savitt, J.; Apr 64; 53 pp.
- AD 358 133
 Stanford Research Inst., Menlo Park, CA
 SENSITIVITY FUNDAMENTALS (U).
 Quarterly Rept.; Sep 64-Dec 64; TPR-65-1.
 Amster, A. B., et al; Jan 65; 39 pp.
- AD 383 849
 Rohm and Haas Co., Redstone Research Lab., Huntsville, AL
 SAFETY CONSIDERATIONS IN THE DEVELOPMENT AND EXPLOSIVE CHARACTERIZATION OF
 NOVEL PROPELLANTS (U).
 Tech. Rept.; S-147.
 Parrott, J. W., Pratt, T. H.; Aug 67; 54 pp.
- AD 394 447
 Stanford Research Inst., Menlo Park, CA
 SENSITIVITY FUNDAMENTALS (U).
 Semiannual Rept.; Mar 68-Sep 68; SRI-68-2.
 No Author cited; Nov 68; 170 pp.
- AD 432 598
 Rohm and Haas Co., Redstone Research Lab., Huntsville, AL
 AN ANALYSIS OF SOME ASPECTS OF THE WENOGRADE THERMAL STABILITY EXPERIMENT (U)
 Clem, J. D., Jr., Groetzinger, W. H.; Mar 64; 27 pp.
- AD 448 349
 Naval Ordnance Lab., White Oak, Silver Spring, MD
 REVIEW OF NOL SENSITIVITY WORK APPLICABLE TO LARGE SOLID MOTOR EXPLOSION
 HAZARDS (U).
 Tech. Rept.; NOLTR 64-148.
 Price, D.; Aug 64; 13 pp.

AD 449 749

Naval Ordnance Lab., White Oak, Silver Spring, MD
TRANSITION FROM SLOW BURNING TO DETONATION ROLE OF CONFINEMENT PRESSURE
LOADING, AND SHOCK SENSITIVITY (U).

Tech. Rept.; NOLTR-64-138.

Price, D., et al; Sep 64; 37 pp.

AD 451 263

Naval Ordnance Lab., White Oak, Silver Spring, MD
THE SHOCK-TO-DETONATION TRANSITION IN COMPOSITE AND DOUBLE BASE
PROPELLANTS (U).

Tech. Rept.; NOLTR-64-75.

Coleburn, N. L.; Sep 64; 17 pp.

AD 458 854

Aerojet General Corp., Sacramento, CA
INVESTIGATION OF THE MECHANISMS OF DECOMPOSITION, COMBUSTION, AND
DETONATION OF SOLIDS (U).

Final Rept.; Mar 64-Feb 65; 0372-01F.

Cheselska, F. J.; Mar 65.

AD 470 648

Naval Ordnance Lab., White Oak, Silver Spring, MD
RECALIBRATION OF STANDARD CARD-GAP TEST (U).

Tech. Rept.; NOLTR 65-43.

Liddiard, Jr., T. P., Price, D.; Aug 65; 46 pp.

AD 726 694

Naval Ordnance Lab., White Oak, Silver Spring, MD
BEHAVIOR OF PMMA CYLINDER UNDER SHOCK LOADING BY PENTOLITE CHARGES (U).

Tech. Rept.; NOL TR-70-265.

Erkman, J. O.; Apr 70; 143 pp.

AD 735 289

Air Force Rocket Propulsion Lab., Edwards, CA
HOT DESTRUCT TEST OF THE THIRD-STAGE ATHENA-H SOLID ROCKET MOTOR (U).

Tech. Rept.; Feb 71-Apr 71; AFRPL-TR-71-116.

Seibel, R. M., Price, C. P.; Nov 71; 31 pp.

- AD 741 901
IIT Research Inst., Chicago, IL
INITIATION MECHANISMS OF SOLID ROCKET PROPELLANT DETONATION (U).
Final Rept.; Apr 67-Mar 71; IITRI-J6245; AFOSR-TR-71-3028.
Napadensky, H. S., Kot, C. A.; Nov 71; 34 pp.
- AD 742 770
Naval Ordnance Lab., White Oak, Silver Spring, MD
AN EVALUATION OF ORGANIC PEROXIDE HAZARD CLASSIFICATION SYSTEMS AND TEST
METHODS (U).
Final Rept.; May 72-Jun 72; NOL TR-72-63; TSA-20-72-1.
Boyars, C.; Feb 72; 58 pp.
- AD 745 781
Stanford Research Inst., Menlo Park, CA
ATMOSPHERIC ELECTRICITY AND THE APOLLO SERIES (U).
Tech. Rept.; 1969-1972; SRI-SN-18.
Nanevich, J. E., et al; Jun 72; 84 pp.
- AD 746 309
Lightning and Transients Research Inst., Miami Beach, FL
SMALL ROCKET WIRE DEPLOYMENT FOR LIGHTNING TRIGGERING AND HAZARD
REDUCTION (U).
Final Rept.; Jul 70-Dec 71; LTRI-537; AFCRL-72-0218.
Stahmann, J. R.; Mar 72; 63 pp.
- AD 749 797
Stanford Research Inst., Menlo Park, CA
SENSITIVITY FUNDAMENTALS (U).
Semiannual Rept.; Mar 72-Aug 72; SRI-72-2.
Hill, M. E., et al; Sep 72; 50 pp.
- AD 752 242
IIT Research Inst., Chicago, IL
INITIATION MECHANISMS OF SOLID ROCKET PROPELLANT DETONATION (U).
Interim Rept.; Apr 71-Mar 72; AFOSR-TR-72-2027.
Napadensky, H. S., Kot, C. A.; Aug 72; 22 pp.
- AD 758 255
Univ. of Arizona, Tucson, AZ
A THEORETICAL STUDY OF ACCIDENTAL INITIATION OF ENCASED HIGH EXPLOSIVE
CHARGES BY GAS COMPRESSION MECHANISMS (U).
Interim Rept.; Sep 70-Feb 73; AFOSR-TR-73-0524.
Randolph, A. D., Simpson, K. O.; Feb 73; 40 pp.
- AD 762 149
Army Research and Development Ctr.; BRL, Aberdeen Proving Ground, MD
HOT PLATE FLAMMABILITY TESTS (U).
Tech. Memorandum; BRL-MR-2292.
Strittmater, R. C., Holmes, H. E.; May 73; 18 pp.

AD 773 743

Naval Ordnance Lab., White Oak, Silver Spring, MD
SMALL SCALE GAP TEST (SSGT) DATA COMPILATION, 1959 - 1972. VOLUME 1,
UNCLASSIFIED EXPLOSIVES (U).
Final Rept.; 1959-1972; NOL TR-73-132, Vol. 1.
Ayres, J. N., et al; Oct 73; 376 pp.

AD 775 580

Dept. of Defense, ESB, Washington, DC
MINUTES OF THE EXPLOSIVES SAFETY SEMINAR (15TH) HELD AT HYATT REGENCY
HOTEL, SAN FRANCISCO, CALIFORNIA, ON 18-19-20 SEPTEMBER 1973.
VOLUME 1 (U).
Tech. Rept.; No Report no.
No Author cited; Sep 73; 761 pp.

AD 783 296

Univ. of Arizona, Tucson, AZ
STUDY OF ACCIDENTAL IGNITION OF ENCASED HIGH EXPLOSIVE CHARGES BY GAS
COMPRESSION MECHANISMS (U).
Interim Rept.; Mar 73-Feb 74; No Report no.
Randolph, A. D., Simpson, K. O.; May 74; 138 pp.

AD 784 066

Army Picatinny Arsenal, Dover, NJ
DEVELOPMENT OF A SAFER INTERMEDIATE AND FIRST FIRE FORMULATION FOR THE
M49A1 SURFACE, TRIP FLARE (U).
Tech. Rept.; PA-TR-4636.
Carrazza, J. A., Jr., et al; Jul 74; 43 pp.

AD 816 021

Rohm and Haas Co., Redstone Research Lab., Huntsville, AL
SHOCK RESPONSE OF FILLED PLASTICS (U).
S-136.
Johnson, E. G., Randow, M. L.; Jun 67; 18 pp.

AD 844 947

Rohm and Haas Co., Redstone Research Lab., Huntsville, AL
INITIATION OF DETONATION IN SOLID PROPELLANTS (U).
Tech. Rept.; S-177.
Pratt, T. H.; Nov 68; 70 pp.

AD 845 078

Rohm and Haas Co., Redstone Research Lab., Huntsville, AL
DEVELOPMENT OF A BALL INDENTATION TEST FOR SAMPLES OF FINITE THICKNESS (U).
Tech. Rept.; S-182.
Sigmon, W. M., et al; Dec 68; 36 pp.

AD 866 472

Army Frankford Arsenal, Philadelphia, PA.
A SURVEY OF THE METHODS OF TESTING THE ELECTROSTATIC SENSITIVITY OF
SOLIDS (U).
Tech. Memorandum; FA-M69-29-1.
Perkins, W. D.; Dec 69; 38 pp.

- AD 876 190
 Army Test and Evaluation Command, Aberdeen Proving Ground, MD
 SAFETY EVALUATION--CLOSE SUPPORT ROCKETS AND MISSILES (U).
 Final Rept.; MTP-4-2-503.
 No Author cited; Jul 70; 10 pp.
- AD 876 346
 Air Force Rocket Propulsion Lab., Edwards, CA
 THE EFFECTS OF ELECTROSTATIC FIELDS ON FLAME SPREAD RATES OF SOLID
 PROPELLANT (U).
 Tech. Rept.; Jan 68-Jun 69; AFRPL-TR-70-118.
 Turner, S. R.; Mar 70; 191 pp.
- AD 902-877
 Naval Weapons Ctr., China Lake, CA
 COOKOFF PREDICTION OF EXPLOSIVES BY THERMAL ANALYSIS TECHNIQUES (U).
 Summary Rept.; NWC TP-5245.
 Anderson, C. M.; Jul 72; 48 pp.
- AD 913 898
 Stanford Research Inst., Menlo Park, CA
 TITAN VEHICLE ELECTROSTATIC ENVIRONMENT (U).
 Final Rept.; Feb 70-Dec 72; AFAL-TR-73-170.
 Nanevich, J. E., Hilbers, G. R.; Jul 73; 177 pp.
- AD 914 334
 Dept. of Defense, DCASR, Atlanta, GA
 MINUTES OF THE ANNUAL EXPLOSIVES SAFETY SEMINAR (3RD) HELD AT ATLANTA
 TOWNE-HOUSE MOTOR INN, ATLANTA, GEORGIA, ON 20, 22 JUNE 1973 (U).
 Tech. Rept.; No Report no.
 No Author cited; Jun 73; 217 pp.
- AD A003 595
 URS Systems Corp., URS Research Co., Burlingame, CA
 INVESTIGATION OF THE EXPLOSIVE POTENTIAL OF THE HYBRID PROPELLANT
 COMBINATIONS N2O4/PBAN AND CTF/PBAN (U).
 Tech. Rept.; URS-652-26; AFRPL-TR-67-124.
 Wilton, C.; Mar 67; 103 pp.
- AD A008 142
 Naval Ordnance Lab., White Oak, Silver Spring, MD
 SENSITIVITY OF EXPLOSIVES TO TRANSITION FROM DEFLAGRATION TO
 DETONATION (U).
 Tech. Rept.; Feb 73-Feb 75; NOL TR-74-186.
 Bernecker, R. R., Price, D.; Feb 75; 103 pp.
- AD A011 778
 Univ. of Arizona, Tucson, AZ
 IGNITION OF HE CHARGES BY A GAP COMPRESSION MECHANISM (U).
 Final Rept.; Jan 74-Jun 75; No Report no. AFOSR-TR-75-0826.
 Randolph, A. D., Simpson, K. O.; Apr 75; 50 pp.

- AD A013 812
Franklin Inst. Research Lab., Philadelphia, PA
DETERMINATION OF THE ELECTRICAL PROPERTIES OF M9 PROPELLANT (U).
Final Rept.; F-C3854
Davey, C. T.; May 75; 63 pp.
- AD A015 003
Naval Research Lab., Washington, DC
ELECTROSTATIC HAZARDS PRODUCED BY CARBON DIOXIDE IN INERTING AND FIRE-
EXTINGUISHING SYSTEMS (U).
Final Rept.; NRL 7920.
Leonard, J. T., Clark, R. C.; Aug 75; 22 pp.
- AD A018 351
Naval Weapons Ctr., China Lake, CA
SAFETY EVALUATION TESTS OF CONDUCTIVE FLOOR COATINGS FOR ORDNANCE
FACILITIES (U).
Summary Rept.; Mar 73-Apr 75; NWC TP-5786.
Pritchard, G. C.; Sep 75; 28 pp.
- AD A019 919
Naval Surface Weapons Ctr., White Oak Lab., Silver Spring, MD
SPONTANEOUSLY COMBUSTIBLE SOLIDS--A LITERATURE STUDY (U).
Final Rept.; Apr 74-Oct 74; NSWC WOL-TR-75-159.
Kayser, E. G., Boyars, C.; May 75; 36 pp.
- AD A026 051
Univ. of California, Lawrence Radiation Lab., Livermore, CA
DETONATION PROPERTIES OF THE INSENSITIVE EXPLOSIVE TATB (U).
Tech. Rept.; No Report no.
Jackson, R. K., Weingart, R. C.; 1976; 15 pp.
- AD A029 068
Army Missile Command, Redstone Arsenal, AL
PERSHING DESTRUCT SAFE AND ARM DETONATOR ELECTRICAL SENSITIVITY AND
OUTPUT EVALUATION (U).
Tech. Rept.; RK-76-14.
Williams, N. P., Williams, W. A.; Jun 76; 17 pp.
- AD A029 722
Hercules, Inc., Allegany Ballistics Lab., Cumberland, MD
HAZARDS AND RISK ANALYSIS OF DETERRENT EXTRACTION PROCESS WITH ALTERNATE
SOLVENT (U).
Final Rept.; ABL-A08278-520-03-006; FA-TR-76049.
Smith, G. D.; Dec 75; 36 pp.
- AD A030 754
Franklin Inst. Research Lab., Philadelphia, PA
METHODS FOR MONITORING INITIATING SOURCES GENERATED IN PYROTECHNIC
PROCESSING EQUIPMENT (U).
Final Rept.; PA-TR-4981.
Davey, C. T.; Sep 76; 85 pp.

- AD A040 433
Army Ballistic Research Lab., Aberdeen Proving Ground, MD
A NUMERICAL STUDY OF PROJECTILE IMPACT ON EXPLOSIVES (U).
Tech. Memorandum; BRL-MR-2741.
Chawia, M. S., Frey, R. B.; Apr 77; 70 pp.
- AD A043 537
Army Test and Evaluation Command, Aberdeen Proving Ground, MD
ARMING DISTANCE AND IMPACT SENSITIVITY OF FUZES (U).
Final Rept.; TOP-4-2-806.
No Author cited; Apr 77; 16 pp.
- AD A044 783
Army Large Caliber Weapon Systems Lab., Dover, NJ
PROCEEDINGS OF THE CONFERENCE ON THE STANDARDIZATION OF SAFETY AND
PERFORMANCE TESTS FOR ENERGETIC MATERIALS. VOLUME I (U).
Tech. Rept.; ARLCD-SP-77004, Vol. 1.
Avrami, L., et al; Sep 77; 580 pp.
- AD A058 987
Naval Weapons Ctr., China Lake, CA
SAFETY EVALUATION TESTS OF PERSONAL PROTECTIVE EQUIPMENT FOR ORDNANCE
OPERATIONS (U).
Tech. Rept.; NWC TP-6008.
Pritchard, G. C.; Aug 78; 38 pp.
- AD A064 107
Army Large Caliber Weapon Systems Lab., Dover, NJ
PROCEEDINGS OF THE CONFERENCE ON THE STANDARDIZATION OF SAFETY AND
PERFORMANCE TESTS FOR ENERGETIC MATERIALS. VOLUME II (U).
Tech. Rept.; ARLCD-SP-77004, Vol. II.
Avrami, L., et al; Nov 78; 67 pp.
- AD A064 138
IIT Research Inst., Chicago, IL
DEVELOPMENT OF HAZARDS CLASSIFICATION DATA ON PROPELLANTS AND
EXPLOSIVES (U).
Final Rept.; IITRI-J6377; ARLCD-CR-78035.
Napadensky, H. S., et al; Nov 78; 232 pp.
- AD A090 674
IIT Research Inst., Chicago, IL
RECOMMENDED HAZARD CLASSIFICATION PROCEDURES FOR IN-PROCESS PROPELLANT
AND EXPLOSIVE MATERIAL (U).
Final Rept.; IITRI-J6432A; ARLCD-CR-80025.
Napadensky, H. S., et al; Sep 80; 123 pp.
- AD A093 521
Dept. of Defense, ESB, Alexandria, VA
MINUTES OF THE NINETEENTH EXPLOSIVES SAFETY SEMINAR. VOLUME I (U).
Tech. Rept.; Sep 80; No Report no.
No Author cited; 1980; 938 pp.

AD A094 741

IIT Research Inst., Chicago, IL
DEVELOPMENT OF A HAZARD CLASSIFICATION PROCEDURE FOR IN PROCESS PROPPELLANT
AND EXPLOSIVE MATERIALS (U).

Final Rept.; IITRI-J6432B; ARLCD-SP-80004.

Napadensky, H. S., et al; Nov 80; 277 pp.

AD A095 302

Army Large Caliber Weapon Systems Lab., Dover, NJ
SECOND INTERNATIONAL CONFERENCE ON THE STANDARDIZATION OF SAFETY AND
PERFORMANCE TESTS FOR ENERGETIC MATERIALS (U).

Tech. Rept.; ARLCD-SP-80005.

Walker, R. F., et al; Feb 81; 109 pp.

AD A095 352

Army Large Caliber Weapon Systems Lab., Dover, NJ
SAFETY AND CHARACTERIZATION TESTS ON HIVELITE COMPOSITION 300435 (U).

Tech. Rept.; ARLCD-TR-80058.

Avrami, L.; Feb 81; 38 pp.

AD A095 353

Hazards Research Corp., Rockaway, NJ
EXPLOSIBILITY OF ENERGETIC MATERIAL DUSTS (U).

Final Rept.; ARLCD-CR-80042.

Patino, G., Jr., et al; Jan 81; 171 pp.

AD A096 248

Computer Sciences Corp., Bay St. Louis, MS
A COMPILATION OF HAZARD TEST DATA FOR PYROTECHNIC COMPOSITIONS (U).

Final Rept.; Jan 69-Mar 79; ARLCD-CR-80047.

McIntyre, F. L., Rindner, R. M.; Oct 80; 390 pp.

AD A100 752

Army Large Caliber Weapon Systems Lab., Dover, NJ
U. S. (ARRADCOM) TEST RESULTS FOR NATO ROUND-ROBIN TEST ON HIGH
EXPLOSIVES (U).

Tech. Rept.; ARLCD-TR-81010.

Avrami, L., Kirshenbaum, M. S.; May 81; 55 pp.

AD A109 567

Air Force Arnold Engineering Development Ctr., Arnold Air Force
Station, TN

WIND TUNNEL TESTS OF THE SPACE SHUTTLE FOAM INSULATION WITH SIMULATED
DEBONDED REGIONS - ADDENDUM (U).

Final Rept.; Aug 81; AEDC-TSR-81-V13, Addn.

Ticatch, L. A., Nutt, K. W.; Sep 81; 19 pp.

AD A114 966

Army Large Caliber Weapon Systems Lab., Dover NJ
HAZARDS TESTING OF AMMONIUM PERCHLORATE (U).

Final Rept.; Mar 82-Apr 82; ARLCD-CR-82026.

McIntyre, F. L., et al; May 82; 58 pp.

- AD A124 400
 Dept. of Defense, ESB, Alexandria, VA
 MINUTES OF THE TWENTIETH EXPLOSIVES SAFETY SEMINAR. VOLUME I (U).
 Tech. Rept.; No Report no.
 No Author cited; 1982; 940 pp.
- AD A143 157
 American Defense Preparedness Association, Arlington, VA
 ANNUAL MEETING OF THE PYROTECHNICS AND EXPLOSIVES APPLICATIONS SECTION ON
 THE AMERICAN DEFENSE PREPAREDNESS ASSOCIATION AT FORT WORTH, TEXAS,
 27-29 SEPTEMBER 1983. (U).
 Sep 29, 1983; 289 pp.
- AD A152 062
 Department of Defense Explosives Safety Board, Alexandria, VA
 MINUTES OF THE EXPLOSIVES SAFETY SEMINAR (21ST) HELD AT HOUSTON, TEXAS ON
 28-30 AUGUST 1984. VOLUME 1. (U).
 Aug, 1984; 811 pp.
- AD A165 395
 Army Material Test and Evaluation Directorate, White Sands Missile
 Range, NM
 SAFETY TESTING OF MISSILE AND ROCKET SYSTEMS EMPLOYING MANNED LAUNCH
 STATIONS. (U).
 Final Rept. on International Test Operations Procedures, ITOP-5-2-619
 Jan 15, 1986; 76 pp.
- AD B004 208
 General Electric Co., Space Div., Bay St. Louis, MS
 EVALUATION OF TEST METHODS FOR PYROTECHNIC HAZARD CLASSIFICATION (U).
 Tech. Rept.; Sep 73-Sep 74; EA-4D01; EM-CR-74051.
 Wilcox, W. R.; Mar 75; 163 pp.
- AD B004 209
 General Electric Co., Space Div., Bay St. Louis, MS
 FORMULATION OF HAZARD EVALUATION INDICES FOR PYROTECHNIC PROCESSES (U).
 Tech. Rept.; Sep 73-Sep 74; EA-4D11; EM-CR-74052.
 Nestle, W. R.; Mar 75; 56 pp.
- AD B004 405
 General Electric Co., Space Div., Bay St. Louis, MS
 IDENTIFICATION AND EVALUATION OF HAZARDS ASSOCIATED WITH BLENDING OF VIOLET
 SMOKE MIX BY JET AIRMIX PROCESS (U).
 Tech. Rept.; Jul 74-Nov 74; EA-4D91; EM-CR-75001.
 McIntyre, F. L.; Mar 75; 44 pp.
- AD B013 563
 Silas Mason Co., Inc., Mason and Hanger, Amarillo, TX
 SOME SENSITIVITY AND PERFORMANCE CHARACTERISTICS OF THE EXPLOSIVES H-6 AND
 TRITONAL (U).
 Final Rept.; Mar 72-Jun 73; AFATL-TR-74-104.
 Slape, R. J., et al; Jun 74; 22 pp.

AD B018 583

Naval Weapons Ctr., China Lake, CA
FUNCTION AND SAFETY TESTS OF NOS-365 MONOPROPELLANT (U).
Summary Rept.; Aug 73-Apr 76; NWC TP-5940.
Mallory, H. D.; Apr 77; 26 pp.

PB 220 084

General Electric Co., Space Div., Bay St. Louis, MS
HAZARD CLASSIFICATION OF OXIDIZING MATERIALS AND FLAMMABLE SOLIDS FOR
TRANSPORTATION--EVALUATION OF TEST METHODS (U)
Final Rept.; GE-HERE-FR-007; TSA-20-72-6.
King, P. V., Lasseigne, A. H.; May 72; 54 pp.

PB 223 769

General Electric Co., Space Div., Bay St. Louis, MS
HAZARD CLASSIFICATION OF EXPLOSIVES FOR TRANSPORTATION--EVALUATION OF
TEST METHODS (U).
Final Rept.; GE-HERE-FR-006; TES-20-72-5.
King, P. V., Lasseigne, A. H.; May 72; 115 pp.

PB 225 422

General Electric Co., Space Div., Bay St. Louis, MS
HAZARD CLASSIFICATION OF EXPLOSIVES FOR TRANSPORTATION--EVALUATION OF
TEST METHODS. PHASE II (U).
Final Rept.; GE-HERE-FR-009; TES-20-73-2.
Lasseigne, A. H.; May 73; 150 pp.

N66-26546

North American Rockwell Corp., Rocketdyne Div., Canoga Park, CA
THE DESIGN AND ANALYSIS OF SENSITIVITY EXPERIMENTS. (U).
R-6152, Vol. I; NASA CR-62026, Vol. I.
Rothman, D., et al; May 65; 266 pp.

N66-26546

North American Rockwell Corp., Rocketdyne Div., Canoga Park, CA
THE DESIGN AND ANALYSIS OF SENSITIVITY EXPERIMENTS. (U).
R-6152, Vol. II; NASA CR-62026, Vol. II.
Rothman, D., et al; May 65; 172 pp.

N68-32779

Research Triangle Inst., Research Triangle Park, NC
PRACTICAL RELIABILITY. VOLUME III, TESTING (U).
Tech. Rept.; NASA CR-1128
No Author cited; Aug 68; 289 pp.

N70-28675

California Inst. of Technology, Jet Propulsion Lab., Pasadena, CA
SENSITIVITY OF EXPLOSIVES TO LASER ENERGY (U).
Tech. Rept.; TR-32-1474.
Menichelli, V. J., Yang, L. C.; Apr 70; 27 pp.

N70-30091

Susquehanna Corp., Atlantic Research Corp., Alexandria, VA
A STUDY OF ENERGY RELEASE IN ROCKET PROPELLANTS BY A PROJECTILE IMPACT
METHOD (U).

Final Rept.; NASA CR-66926.

Macek, A.; Dec 69; 35 pp.

N72-18963

General Electric Co., Space Div., Bay St. Louis, MS
PYROTECHNIC HAZARDS CLASSIFICATION AND EVALUATION PROGRAM--ELECTROSTATIC
VULNERABILITY OF THE E8 AND XM15-XM165 CLUSTERS. PHASE I (U).

Final Rept.; GE-MTSD-R-052; NASA CR-123038.

No Author cited; Dec 70; 161 pp.

N72-18964

General Electric Co., Space Div., Bay St. Louis, MS
PYROTECHNIC HAZARDS CLASSIFICATION AND EVALUATION PROGRAM--RUN-UP REACTION
TESTING IN PYROTECHNIC DUST SUSPENSION (U).

Final Rept.; GE-MTSD-R-062; NASA CR-123039.

No Author cited; Apr 71; 60 pp.

N72-18965

General Electric Co., Space Div., Bay St. Louis, MS
PYROTECHNIC HAZARDS CLASSIFICATION AND EVALUATION PROGRAM--INVESTIGATION OF
SENSITIVITY TEST METHODS AND PROCEDURES FOR PYROTECHNIC HAZARDS
EVALUATION AND CLASSIFICATION. PHASE III, SEGMENTS 1-4 (U).

Final Rept.; GE-MTSD-R-059; NASA CR-122979.

No Author cited; Apr 71; 170 pp.

N72-18966

General Electric Co., Space Div., Bay St. Louis, MS
PYROTECHNIC HAZARDS CLASSIFICATION AND EVALUATION PROGRAM--RECORDS AND
EXPERIENCE ANALYSIS. PHASE II, SEGMENT 1 (U).

Final Rept.; GE-MTSD-R-045; NASA CR-122940.

No Author cited; Aug 70; 40 pp.

N72-18968

General Electric Co., Space Div., Bay St. Louis, MS
PYROTECHNIC HAZARDS CLASSIFICATION AND EVALUATION PROGRAM TEST REPORT--
HEAT FLUX STUDY OF DEFLAGRATING PYROTECHNIC MUNITIONS (U).

Final Rept.; GE-MTSD-R-061; NASA CR-122980.

Fassnacht, P.O.; Apr 71; 77 pp.

N72-18969

General Electric Co., Space Div., Bay St. Louis, MS
PYROTECHNIC HAZARDS CLASSIFICATION AND EVALUATION PROGRAM--TEST PLAN
FOR DETERMINING HAZARDS ASSOCIATED WITH PYROTECHNIC MANUFACTURING
PROCESSES. PHASE II, SEGMENT 3 (U).

Final Rept.; GE-MTSD-R-054; NASA CR-122978.

No Author cited; Jan 71; 73 pp.

N72-18970

General Electric Co., Space Div., Bay St. Louis, MS
PYROTECHNIC HAZARDS CLASSIFICATION AND EVALUATION PROGRAM--ELECTROSTATIC
VULNERABILITY OF THE E8 AND XM15-XM165 CLUSTERS. PHASE II (U).
Final Rept.; GE-MTSD-R-057; NASA CR-123040.
No Author cited; Mar 71; 188 pp.

N72-24526

General Electric Co., Aerospace Group, Space Div., Philadelphia, PA
NONDESTRUCTIVE TESTING OF SCOUT ROCKET MOTORS (U).
Tech. Rept.; NASA CR-2013.
Oaks, A. E.; Apr 72; 284 pp.

N72-30898

Stanford Research Inst., Menlo Park, CA
MEASUREMENTS IN ATMOSPHERIC ELECTRICITY DESIGNED TO IMPROVE LAUNCH SAFETY
DURING THE APOLLO SERIES (U).
Final Rept.; NASA CR-115754.
Nanevich, J. E., et al; Jun 72; 87 pp.

N72-33947

Bureau of Mines, Pittsburgh, PA
METHODS FOR EVALUATING EXPLOSIVES AND HAZARDOUS MATERIALS (U).
Tech. Rept.; IC-8541.
Mason, C. M., Aiken, E. G.; 1972; 53 pp.

N74-28434

General Electric Co., Space Div., Bay St. Louis, MS
HAZARDS CLASSIFICATION OF FLAMMABLE AND OXIDIZING MATERIALS FOR
TRANSPORTATION--EVALUATION OF TEST METHODS. PHASE II (U).
Final Rept.; TES-20-73-1.
Hough, R., et al; Apr 73; 88 pp.

N75-22485

NASA Kennedy Space Ctr., Kennedy Space Ctr., FL
REPRODUCIBILITY OF LIQUID OXYGEN IMPACT TEST RESULTS (U).
Tech. Note; NASA TN-D-7905.
Gayle, J. B.; May 75; 6 pp.

N75-28166

Naval Ordnance Station, Indian Head, MD
CLASSIFICATION OF OXIDIZERS AND FLAMMABLE SOLIDS, PHASE III (U).
Final Rept.; TES-20-75-2
Dale, C. B.; Mar 75; 33 pp.

N75-31209

NASA Marshall Space Flight Ctr., Huntsville, AL
HIGH-PRESSURE OXYGEN TEST EVALUATIONS (U).
Tech. Memorandum; NASA TM-X-64899.
Schwinghamer, R. J., Key, C. F.; Nov 74; 27 pp.

LA-7193-MS

Univ. of California, Los Alamos Scientific Lab., Los Alamos, NM
DETONATION SENSITIVITY TESTS (U).

Tech. Rept.; LA-7193-MS.

Urizar, M. J., et al; Apr 78; 41 pp.

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